

The petrology and geochemistry of Kuh-e Mish plutonic complex (KPC) south of Sabzevar

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Abstract: The Kuh-e Mish plutonic complex (KPC) is located about 30 km south of Sabzevar. Based on tectonic division, it is part of Sabzevar zone. The Stratigraphic units of the area are conglomerate, tuff, and sandstone of the Paleogene, radiolarites, andesite and tuff unit of Upper Cretaceous. This collection consists of two plutonic rocks types. (1): The granitoid complex of northern Kuh-e Mish which is composed of monzogranite and pyroxene-granodiorite. Geochemically, these rocks are calc-alkaline, peraluminous and I-type of Post Paleocene. (2): The Gabbro-diorite complex of southern Kuh-e Mish which is composed of various plutonic rocks including gabbro, diorite and gabbro-diorite. Geochemically, these rocks are tholeiitic, metaluminous and I-type of Upper Cretaceous. These complexes have occurred in volcanic arc in an active continental margin setting. The combinations of field, petrographic and geochemical data indicates that the plutonic complexes have derived from a mantle source. The magma show negative anomalies of Nb, Ti, Ba, and positive anomalies of K, Rb indication of a subduction zone. According to the geological history of the region, likely subduction of Neo Tethyan oceanic crust beneath the Central Iran has occurred in Laramide orogeny (Late Cretaceous). The boundary between these two populations is gradual and sinusoidal shape. This form of occurrence represents metasomatism and chemical reactions between hot granitoid magma and the pre-existing diorite.

Keywords: *diorite; granitoid; volcanic-arc; Kuh-e Mish; sabzevar.*

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